REMRKS

Status of Claims

Claims 1-40 are pending in the above-identified application. Claims 1, 11, 15, and 18 are independent.

Claim Rejections

Claims 1-40 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite. In particular, the Office Action alleges that the phrases "millimeter band" and "simultaneously receiving" are not defined.

The Office Action states that "millimeter band" is a relative term. Applicants disagree. Millimeter band is a term of art that refers to frequencies between 30 GHz and 300 GHz ranging from one and 10 millimeter waves (as defined by the FCC; see for example "NEWSReport No. DC-2667", October 20, 1994; the term is also used in the Hayashikura reference, e.g., at column 3, line 64).

The Office Action states that the simultaneous reception of the two signals is not clearly defined on how the signals are received simultaneously. Applicants disagree. First of all, as explicitly recited in the claims the receiver includes a receive antenna having a main lobe and a side lobe. Thus the claims explicitly define the structure that enables simultaneously receiving a plurality of millimeter band signal waves. Also, as disclosed for the present invention,

the frequency of the plurality of received signal waves is the same. Contents of the same channel are transmitted completely at the same frequencies, and the receiver simultaneously receives the plurality of signal waves from the plurality of propagation paths (Specification, page 5, lines 7-27). Thus, simultaneous reception occurs because the transmitter transmits signal waves at the same frequency. Accordingly, Applicants are relying on the definition of "simultaneously" as would have been known to one of ordinary skill as well as within the usage of the term in the present.

Applicants respectfully request that the rejection be withdrawn.

Rejection under 35 U.S.C. § 103(a); Fortune, Hayashikura

Claims 1-11, 14-23, 28-40 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Fortune et al. (U.S. Patent 5,450,615, hereinafter Fortune) in view of Hayashikura et al. (U.S. Patent 5,654,715, hereinafter Hayashikura). Applicants respectfully traverse this rejection.

The Office Action states that Fortune's receiver point 212 teaches the claimed stationary receiver. Applicants disagree.

Fortune is directed to a wireless communications system having a plurality of portable communications devices 124, 126, 128, 130 (with respect to Figure 1; column 4, lines 44-48). Fortune discloses a technique for predicting RF receiver power levels. In producing the prediction, a transmitter

point 210 and one or more receiver points 212 are specified (column 4, lines 59-67). A transmit antenna 211 is positioned at the transmitter point 210, a receive antenna 215 is positioned at the receiver point 212 (column 4, line 68, to column 5, line 2). The propagation prediction process begins with the calculation of a received power value for a direct path 217 from transmitter point 210 to receiver point 212. The direct path received power values are calculated using a standard free-space propagation formula (column 5, lines 43-55). Next, received power for all one-reflection paths 219 are calculated, followed by all paths involving two reflections (column 6, lines 6-20). The total received power at the receiver point 212 is calculated (column 6, lines 39-56). The process is implemented for every reference transmitter location/reference receiver location pair (column 9, lines 8-10). Thus, Fortune's receiver point 212 is assigned a position as part of a technique for predicting RF received power levels (with respect to Figure 2, beginning at column 4, line 59). The actual communication device itself is portable.

Therefore, unlike Fortune, the claimed invention is directed to a millimeter band signal transmitting/receiving system comprising a stationary receiver. Thus, at least for this difference, Applicants submit that the rejection fails to establish *prima facie* obviousness.

As has been previously stated, in order to clarify the term "capable of simultaneously receiving a plurality of said millimeter band signal waves," in claim 1, and comparable phrases in the other independent claims, the independent claims have been amended to recite that the stationary receiver includes a receive antenna having a main lobe and a side lobe. Thus, each of the independent claims recite specific structure that enables simultaneous reception of millimeter band signal waves. Support for the claim amendments can be found in the present specification at page 9, lines 5-8, and page 12, lines 19-24. Applicants submit that neither Fortune nor Hayashikura teach a stationary receiver including a receive antenna having a main lobe and a side lobe arranged to simultaneously receive a plurality of millimeter band signal waves.

The Final Office Action admits that Fortune fails to teach or suggest a receive antenna having a main lobe and a side lobe, per the statement that, "Fortune et al didn't specifically disclose a millimeter band signal transmitting/receiving system, and a millimeter band propagation signal, transmitting and receiving a millimeter band signal wave and receive antenna having a main lobe and a side lobe." Applicants agree with this statement as Fortune discloses that, "both transmit and receive antennas 211, 215 are

assumed to be vertical half-wave dipoles" (see Fortune at column 5, lines 18-20; and see also column 9, lines 42-44).

To make up for the deficiency in Fortune of not explicitly teaching a receive antenna having a main lobe and a side lobe, the Final Office Action alleges that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to have an antenna's main lobe and side lobe in Fortune's receiving antenna, which is intended to receive the direct and indirect paths and to ensure antenna gains as stated in the specification page 9, lines 5-9 and page 12, lines 19-24 as disclosed by Fortune's calculated reflection path losses and direct path losses being scaled based on the antenna power gain in the direction of propagation (col. 6, lines 52-56) in order to receive the maximum radiation achievable by taking into account a lossy environment in which multipath occurs which reduce the antenna's radiation intensity."

Fortune is directed to optimization of a wireless communications system 100 (as per the system shown in Figure 1) having a base station 120 and a plurality of portable communications devices 124, 126, 128, 130. In particular, Fortune discloses that it is desired to position the antenna 132 of the base station at a location which provides optimum RF coverage within the building such that when the antenna transmits a signal, the received RF power at

virtually all locations within the building exceeds a predetermined value (column 4, lines 49-54). In order to optimize the position of the base station antenna, Fortune discloses a technique for predicting RF receiving power levels. Thus, Fortune discloses a technique that takes into account predicted signals between a transmitter point and possible receiver points. Fortune assumes that both transmit and receive antennas are vertical half-wave dipoles (column 5, lines 18-20).

Thus, unlike Fortune, the claimed invention comprises a stationary receiver including a receive antenna having a main lobe and a side lobe capable of simultaneously receiving a plurality of millimeter band signal waves from a plurality of propagation paths. Applicants submit that Hayashikura fails to make up for this deficiency in Fortune.

Thus, at least for this additional reason, the rejection fails to establish *prima facie* obviousness for claim 1.

Since the other independent claims 11, 15, and 18 also recite comparable limitations for the stationary receiver, Hayashikura fails to make up for the deficiency in Fortune for those claims as well. The same arguments apply to associated dependent claims as well.

Further with respect to claim 11, Applicants submit that Fortune fails to teach a stationary receiver arranged to simultaneously receive a plurality of millimeter band signal waves output from a plurality of transmitters.

The Final Office Action directs Applicants' attention to column 6, lines 48-53 of Fortune for teaching a plurality of stationary transmitters. However, this section pertains to a prediction technique for reflection paths from a single transmission point to a single receiver point (column 6, lines 49-52, where it is stated, "..., the total received power at the receiver point 212 is calculated ..."). Fortune discloses a one-to-one relationship between a transmit antenna and a receive antenna. Fortune's technique applies to a transmitter point and one or more receiver points, where a transmit antenna is positioned at the transmitter point and a receive antenna is positioned at the receiver point (column 4, line 65, to column 5, line 2). Thus, Applicants submit that Fortune fails to teach the claimed invention of claim 11. Accordingly, for at least this additional reason, Applicants submit that the rejection fails to establish *prima facie* obviousness for claim 11.

Accordingly, Applicants respectfully request that the rejection be withdrawn.

Rejection under 35 U.S.C. § 103(a) over Fortune, Hayashikura and Kagami

Claims 12, 13, 24-26 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Fortune, Hayashikura, Kagami et al. (U.S. Patent 5,479,443).

As noted above, the Final Office Action relies on Fortune for teaching a plurality of stationary transmitters and stationary receiver of claim 11. Kagami is relied on for teaching the additional claimed elements recited in claims 12, 13, and 24-26.

Fortune is directed to a technique for predicting RF propagation within a building, wherein a reference transmitter location and a plurality of reference receiver locations are selected and a local mean of the received RF power at each of the reference receiver locations is calculated (Abstract). In particular, it is desired to position a base station antenna 132 such that when the antenna transmits a signal, the received RF power at all locations within the building exceeds a predetermined value (see Figure 1; column 4, lines 49-54). In predicting RF received power levels, a transmitter point 210 and one or more receiver points 212 are specified (Figure 2; column 4, lines 65-67). A transmit antenna 211 is positioned at the transmitter point 210 and a receive antenna 215 is positioned at the receiver point 212. Further, both transmit and receive

antennas 211, 215 are assumed to be vertical half-wave dipole (column 5, lines 18-20). The technique can model other types of antennas by multiplying the total calculated path loss by the antenna power gain in the direction of interest (column 6, lines 52-56).

Even though Fortune appears to disclose a technique that analyzes more than one path between a transmitter point and a receiver point, it does not appear that Fortune discloses a system comprising two transmitters and a receiver including a receive antenna having a main lobe and a side lobe arranged to simultaneously receive a plurality of millimeter bans signal waves. Thus, Applicants disagree that Fortune teaches or suggests the claimed plurality of stationary transmitters and stationary receiver with a receive antenna having a main lobe and a side lobe.

Kagami is directed to a digital radio-relay system having a transmitting terminal station and at least one repeater station (Abstract). Kagami discloses wherein the system includes a transmitting terminal station 320 having a pair of modulators 324-1 and 324-2 coupled with a pair of transmitters 322-1 and 322-2 (Figure 10). The transmitters 322-1 and 322-2 are supplied with a common reference frequency by a common oscillator 321, such that a horizontal polarized wave is transmitted in-phase with a vertical polarized wave (column 9, lines 42-47). Each transmitter has a phase lock oscillator, a

frequency mixer and a high power amplifier. A non-regenerative repeater station 300 has an antenna 310 for receiving the H polarized wave and V polarized wave.

Applicants submit that Kagami fails to make up for the deficiency in Fortune of teaching a stationary receiver with a receive antenna having a main lobe and a side lobe arranged for simultaneously receive a plurality of millimeter band signal waves. Thus, at least for this reason, Applicants submit that the rejection fails to establish *prima facie* obviousness. Accordingly, Applicants request that the rejection be withdrawn.

Rejection under 35 USC 103; Fortune, Hayashikura, Evans

Claim 27 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Fortune and Hayashikura, as applied to claim 18, in view of Evans et al. (U.S. Patent 5,920,813, hereinafter Evans). Applicants respectfully traverse this rejection at least for the above reasons with respect to claim 18.

CONCLUSION

In view of the above amendments and remarks, reconsideration of the rejections and allowance of each of claims 1-40 in connection with the present application are earnestly solicited.

U.S. Application No. 09/400,974
Docket No. 0033-0619P
February 6, 2004
Art Unit: 2685

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee of $110.00 is attached hereto.

If there are any outstanding matters remaining in this application, the Examiner is invited to contact Robert W. Downs (Registration Number 48,222) in the Washington, D.C. area at (703) 205-8000 in order to discuss these matters.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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By _____

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